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CACTUS CYST NEMATODE, *CACTODERA CACTI*

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INTRODUCTION: Cactus cyst nematode was first detected in Belle Glade, Florida in 1960 associated with roots of celery plants from Belle Glade. Since that time, it has been detected in 64 samples, almost all of which originated from cactus plantings in Florida greenhouses. The popular demand for cactus plants by homeowners and landscapers has resulted in a considerable number of greenhouse plantings of cactus in Florida, and in the occurrence of many cactus plants in commerce.

HISTORY: The cactus cyst nematode was first recorded by Adam in 1932 (1) who considered it *Heterodera schachtii* Schmidt, 1871. In 1941, Filipjev Schuurmans Stekhoven named the species *Heterodera cacti*. In 1978 the name was changed to *Cactodera cacti* (Filipjev Schuurmans Stekhoven, 1941) Krall & Krall 1978.

GEOGRAPHIC DISTRIBUTION: In the United States cactus cyst nematode has been reported from Arkansas, California, Colorado, Florida, Georgia, Minnesota and New York. The distribution outside of the United States includes Algeria, Argentina, Australia, Austria, Belgium, Brazil, Canada, Columbia, Cuba, Czechoslovakia, Denmark, England, France, Germany, Hungary, India, Israel, Italy, Japan, Korea, Malta, Mexico, The Netherlands, New Zealand, Poland, Portugal, Spain, Sweden, Switzerland, USSR, Vietnam and Yugoslavia.

Fig. 1. Christmas cactus stem joints with roots removed.
Left: Infested with cactus cyst nematode. Right: uninfested.

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SURVIVAL: When cyst nematode females die, the female skin (cuticle) becomes a tough, protective pouch (cyst) containing viable eggs, resistant to many environmental conditions. Eggs protected by cysts can survive many years in the absence of food.

HOST LIST: Cactus cyst nematode has been associated with or infecting plants contained in 3 families: Cactaceae, Euphorbiaceae and Umbelliferae (Table 1).

SYMPTOMS: Above the soil line plants infected with cactus cyst nematode may exhibit varied symptoms (4,5), including a reddish to yellow color, wilting, stunting, flabby vegetative organs, flower and stem joint reduction (Fig. 1) and, in extreme cases, death. Below the soil line one might see root discoloration and root reduction.

REGULATORY STATUS: Cactus cyst nematodes are not prohibited in commerce, but in small numbers and in the absence of cysts juveniles of this nematode can be mistaken for other species of cyst nematodes prohibited in commerce, so it is suggested Florida growers do not ship infected plants to areas where cyst nematodes are prohibited.

DISSEMINATION: Nematode infection may occur when uninfected plants are placed in close proximity to infected plants. Unsanitary manipulation of infected cactus plants and growing media by hands, tools, or by watering practices will serve to produce new infections. The nematode is frequently detected in commerce by regulatory officials inspecting commercial shipments of cactus in a number of countries indicating the ease with which it is distributed.

CONTROL: Nursery sanitation practices, such as using clean propagative stock in pest free planting media, in clean containers placed on a clean surface and on raised benches are the best preventive controls for this pest. One can also cut the vegetative portion of infected cactus off about one inch above the soil line, and use the cut vegetative stock in clean soil as propagative stock. (One must be certain the plants involved can survive the surgery.) Stelter and Kuhn immersed infected cactus in hot water at 43-45 C for 20-30 min. (8). (One must be absolutely certain by pretesting a few plants that such a treatment will not kill or injure the plants.)

DETECTION: Look for stunted, declining, off-color plants in cactus plantings. Examine the roots of plants showing symptoms of cactus cyst nematode with a hand lens. The cysts will appear as small, golden yellow, pale orange to brown, ovoid to round bodies, inserted in the roots.

LITERATURE CITED:

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Table 1. Plants infected or associated with *Cactodera cacti* (2) (3) (5) (6) (7).

Umbelliferae
**Apium graveolens*

Cactaceae
Aporocactus flagelliformis
Borzicactus trollii
Cereus peruvianus
C. pteranthus
Chamaecerus sylvestri
Coryphantha macrothele
Echinocactus grusonii
E. kurtzianus
Echinocereus pentalophus
Echinopsis sp.
E. aurea
E. multiplex
Epiphyllum sp.
Ferocactus latispinus
F. pilosus
F. setispinus
Gymnocalycium baldianum
G. denudatum
G. joossensianum
G. multiflorum
G. quehlianum
Heliocereus speciosus
**Leuchtenbergia principis*
Lobivia sp.
L. pentlandii
Mammillaria albilanata
M. aurihamata
**M. bocasana*
M. bravoae
M. camptotricha
M. confusa
M. conspicua
M. elegans
M. elongata
M. elongata var. 'Purpurea'
M. elongata var. 'Rufocrocea'
M. gracilis
M. hahniana
M. hidalgensis
M. kunzeana
M. lenta
M. lloydii
M. longicoma
M. longimamma
M. magnimamma
M. martinezii
M. mercadensis
M. parkinsonii
M. perbella
M. pilispina
M. pringlei
M. prolifera
M. rosea
M. saetigera
M. schelhasii
M. schiedeana
M. sempervivi
M. sonorensis
M. pinosissima
M. surculosa
M. winterae
M. woodsii
***Melocactus* sp.
Nopalea cochenillifera
Nopalxochia ackermannii
Notocactus ottonis
N. tabularis
***Opuntia cochanillefera*
O. violacea var. *gosseliniana*
O. inermis
O. lindheimeri
O. macdougaliana
O. macrostachye
**O. microdasys*
O. pailana
O. schumannii
O. stricta
Oreocereus trollii
Phyllocactus ackermanni
Rebutia krainziana
R. kupperana
R. pseudodeminuta 'monstrosus'
R. xanthocarpa
***Rhipsalidopsis gaertneri*
Rhipsalis sp.
**Schlumbergera gaertneri* 'Makoyana'
Selenicereus (=Cereus) Pteranthus
Trichocereus spachianus
Zygocactus truncatus

Euphorbiaceae
Euphorbia canariensis
E. cereiformis
E. natalensis
E. enigator

* Detected in Florida
** First time cactus nematode has been found associated with this plant in Florida.